IV. MANAGEMENT GOALS AND ENVIRONMENTAL IMPACTS

Definition of Terms Used in This Section

1. ***Element*:** An element refers to any biological, public use, or facility maintenance program as defined below for which goals and tasks have been prepared and presented within this plan.
2. ***Biological Element*:** These elements consist of species, habitats, or communities for which specific management goals and tasks have been developed within the plan.
3. ***Biological Element Goal*:** A biological goal is the statement or statements of intended long-range results of management based upon the feasibility of maintaining, enhancing or restoring species populations and/or habitat.
4. ***Hydrophyte:*** Any plant that grows in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content; plants typically found in wet habitats (Federal Interagency Committee for Wetland Delineation 1989).
5. ***Other Waters of the United States*:** Other waters of the United States (Other Waters) are seasonal or perennial water bodies, including lakes, stream channels, drainages, ponds, and other surface water features, that exhibit an ordinary high-water mark but lack positive indicators for one or more of the three wetland parameters (hydrophytic vegetation, hydric soil, and wetland hydrology) (33 CFR 328.4).
6. ***Recruitment*:** The number of a species added to the population per reproductive unit within a specified time-frame.
7. ***Tasks*:** Tasks are the individual projects or work elements which implement the goal(s) and are useful in planning operation and maintenance budgets.
8. ***Waters of the United States:*** This is the encompassing term for areas under federal jurisdiction pursuant to Section 404 of the CWA. Waters of the United States are divided into “wetlands” and “Other Waters”.

Biological Elements: Goals and Impacts

The overall biological management goals for the HLWA, including the original acquisition goals, are:

- Maintain Lahontan cutthroat trout brood stock within Heenan Lake;
- Enhance and restore sage grouse habitat on-site;
- Manage encroaching conifer populations, including juniper and Jeffery pine;
- Actively manage aspen groves;
- Conduct bird surveys and small mammal trapping surveys;
- Prevent disturbance to bald eagle nests.

All management goals are designed to minimize impacts to individual species through maintenance, enhancement, and protection of habitat. Consultations with the appropriate regulatory agencies, and internal coordination with CDFG, will occur for

listed species prior to the commencement of any activities that may potentially impact these species. No impacts to listed species are expected to occur.

Imposed conditions of permit approvals are not described in this document. They will be included in all permit applications on a per application basis and at the time in which permits are sought for activities subject to federal and state regulations.

Biological Element: Biological Management

Goal: Maintain Lahontan cutthroat trout brood stock population within Heenan Lake.

Management Constraints

1. Hatchery funding availability.
2. Hatchery personnel availability.
3. The potential for hybridization of the West Carson River strain with the Independence Lake strain of Lahontan cutthroat trout.
4. Natural events such as drought or fire could impair operations at the facility.

Tasks

a. Purchase the last water rights not owned by CDFG from willing sellers.
b. Secure funding for continued operations at the HLWA egg taking station.

Discussion:
Lahontan cutthroat trout planted in Heenan Lake were originally taken from Blue Lakes, Alpine County, which were of stock derived from the West Carson River. In 1975 a plant of 5,000 adipose marked yearlings from Independence Lake, Sierra Nevada counties, began a phase-out of the original earlier strain of West Carson River fish, which have been determined to be "slightly introgressed with rainbow trout." The West Carson River strain cutthroat trout are not managed for in Heenan Lake, although there are still small numbers of non-adipose clipped fish observed during annual hatchery operations. Presumably, these fish come from Heenan Creek and are derived from West Carson River fish. Genetic analysis has confirmed the purity of the Independence strain and that the West Carson River strain are hybridized with rainbow trout.

The Heenan Lake egg taking station annually takes approximately 500,000 eggs, providing Lahontan cutthroat trout to hatcheries in California and Nevada.

Purchase Water rights
As a provision of the original purchase of the HLWA on November 30, 1982, the water rights were retained by the original landowner. Since that time, 78.8% of the water rights have been purchased by the CDFG to maintain proper lake levels in order to promote the continued success of the egg taking station. In 2005, the CDFG attempted to purchase the remaining 21.2%, but the owner was not interested in selling. If these

water rights become available, they will be purchased by the CDFG to assure the future of operations at the egg taking station.

Maintain Funding
The importance of the Heenan Lake egg taking station assures its continued financial support into the future. The operations at Heenan Lake should continue to remain a top priority as new managers take over as stewards of the HLWA.

Potential Environmental Impacts and Mitigation

No negative environmental impacts are expected from these actions.

Biological Element: Biological Management

Goal: Enhance and restore sage grouse habitat.

Management Constraints

1. Management practices may not seem immediately effective due to sage grouse's low fecundity, nesting success, low juvenile survivability rates, and complex year round habitat requirements.
2. Predators on-site such as coyotes, may pose a threat to sage grouse recovery.
3. Natural events such as flood or drought may impact the success of management practices.
4. Management implementation is dependent on long-term funding.

Tasks

a. Survey the HLWA to assess existing suitable sagebrush habitats.
b. Identify if need exists for additional sites that could be improved for sage grouse habitat.
c. Implement management techniques to improve sagebrush habitat for sage grouse.
d. Conservation strategies should be adaptive and responsive to new information regarding sage grouse management.

Discussion:
Population Management
Assessment of populations will occur first with the identification of lek locations if they exist. The breeding population should be assessed with a lek survey each year, followed by a recruitment survey later in the season. The utmost care should be taken to avoid disturbance of birds during the leking season. A routine population survey schedule will be established to monitor the population and document any trends. Past efforts to translocate grouse from other areas has been minimally successful (Musil et al. 1993, Reese and Connelly 1997).

Prescribed burning should be avoided in areas where sage provides habitat for grouse. Fire tends to burn the plants that provide good habitat and leave the lesser quality habitat plants intact.

General Habitat Management

General habitat management priorities include, monitoring of habitat conditions currently found on-site. This will provide a baseline of data as to what quality of habitat is available, if it is being utilized by sage grouse, and what can be done to make it more attractive to sagebrush species. Schedule vegetation removal if junipers or other conifers have invaded the habitat. Utilize vegetation removal techniques that cause the least damage to sage brush plants. Sage grouse cannot see barbed wire fencing and will collide with fence wires. Flagging will be placed on barbed wire fencing within 1 km of all sage grouse habitat, or alternative fencing materials will be used such as hog wire or wood. The placement of tall structures, such as power line poles, adjacent to sage grouse habitat that will provide predatory raptors perches from which to hunt sage grouse habitat will be avoided (Connelly et al. 2000).

Sage grouse require specific types of habitat structure for breeding, rearing, and wintering habitats. Management strategies for these habitat structures are outlined below.

Breeding Habitat

Sage grouse breeding habitat vegetation control is described as follows: "Manage breeding habitats to support 15–25% canopy cover of sagebrush, perennial herbaceous cover averaging >18 cm in height with >15% canopy cover for grasses and >10% for forbs and a diversity of forbs (Barnett and Crawford 1994, Drut et al. 1994*a*, Apa 1998) during spring. Habitats meeting these conditions should have a high priority for wildfire suppression and controlled burns should not be considered for sagebrush control programs. Sagebrush and herbaceous cover should provide overhead and lateral concealment from predators. If average sagebrush height is >75 cm, herbaceous cover may need to be substantially greater than 18 cm to provide this protection. There is much variability among sagebrush-dominated habitats (Tisdale and Hironaka 1981, Hironaka et al. 1983), and some Wyoming sagebrush and low sagebrush breeding habitats may not support 25% herbaceous cover. In these areas, total herbaceous cover should be >15 %. Further, the herbaceous height requirement may not be possible in habitats dominated by grasses that are relatively short when mature. In all of these cases, local biologists and range ecologists should develop height and cover requirements that are reasonable and ecologically defensible. Leks tend to be relatively open, thus cover on leks should not meet these requirements" (Connelly et al. 2000). All grouse habitat meeting these requirements should be protected not manipulated. All wildfires should be suppressed in breeding habitat.

Brooding Rearing Habitat

Sage grouse rearing can happen anytime between June and November. Sage grouse will potentially use a variety of moist habitats, which support succulent forbs near sage brush cover, such as farmlands, riparian zones, wet meadows, dry lakes and streambeds. All disturbances in these areas will be avoided during these times (Connelly et al. 2000).

Wintering Habitat
Sagebrush provides the main winter habitat for sage grouse. Sagebrush should be tall enough to rise 25-35cm above snow levels allowing sage grouse to utilize this habitat. Wintering habitat should receive the highest priority for fire suppression. If areas are burned avoid removing live brush, live brush will provide an important seed source in areas that burned (Connelly et al. 2000).

Conservation Strategies
Sage brush habitat within the HLWA will be assessed and compared to other sage brush habitat in the surrounding areas where sage grouse occur. This comparison will provide an idea as to why sage grouse may not occur at the HLWA. Management of the sagebrush on the HLWA will be adaptive and responsive to new information about sage grouse in the local area. It is important to the CDFG to preserve species on an ecological/community level, and improvements to sagebrush habitat will promote healthy sage community overall.

Potential Environmental Impacts and Mitigation

The primary goal of the CDFG is to provide suitable habitat in both quantity and quality that can sustain sage grouse populations.

Juniper trees can encroach on sagebrush and diminish the quality of sage grouse habitat. Controlling these trees will benefit sagebrush habitat and all the species that rely on it. However, juniper trees provide an excellent winter food source for wintering mammals and birds, and the removal of juniper trees could negatively impact those species. If juniper trees are controlled only as they encroach upon other habitats there should be no net loss of food for wintering species and, therefore, no negative impact.

Biological Element: Biological Management

Goal: Manage encroachment of conifers, especially juniper and Jeffery pine, into aspen tree stands.

Management Constraints

1. Successful eradication of juniper and Jeffery pine can be difficult and costly. Funding should be secured to implement efforts to the point of continued success.
2. The grazing activities of stray cattle can severely disrupt native plant community structures and habitat restoration efforts.

3. There is currently a high recruitment of invasive juniper saplings in aspen stands.

Tasks

a. Conduct on-going surveys to assess the presence and population sizes of known juniper and Jeffery pine trees where they are encroaching upon aspen stands within the HLWA.
b. Boundary fencing should be repaired to prevent trespass cattle from grazing within the HLWA.
c. In aspen stands negatively affected by conifer encroachment, conifers (up to pole size trees) will be removed whenever feasible.
d. Possible use of fire in aspen stands to control invasive conifers and to stimulate vegetation regeneration (Kay 1997).

Discussion:
Aspen forest is considered an unsettled successional stage of forest recovery after a disturbance such as fire or heavy grazing. Herbaceous plants and deciduous trees, such as aspen, will quickly re-colonize an area after a disturbance (Mayer and Laudenslayer 1988). Aspen has adapted to fire and will re-sprout vigorously and profusely for several years after a stand has burned (Brown 2000). Conifers eventually grow and out-compete the aspen trees to complete the mature forest stand (Mayer and Laudenslayer 1988). Conifers, especially western juniper, will utilize most of the soil moisture, out-competing other species in the area (Bates 1998). If fires, or other disturbances, are suppressed on a long-term basis the natural influx of aspen into disturbed areas will be suppressed. However, re-sprouting aspen after a fire may not reach tree size if ungulate browsing is high (Kay 1997). This may ensue lose of that aspen clone. As the natural forest succession processes continue, conifer encroachment will also threaten aspen stands. Fire can be used successfully to control conifer encroachment onto aspen stands. However, these factors make it difficult to manage and preserve aspen stands on a long-term basis.

Population Surveys
Periodic surveys of aspen stands, where juniper and Jeffery pine trees are encroaching, such as the western edge of the HLWA (**Figure 5**) will provide a data set that will document encroachment trends over time. By understanding the areas where encroachment is the greatest it will be easier to prioritize efforts and utilize resources more efficiently. Annual studies will also document the effectiveness of current efforts and could provide excellent management practice information to other managers in the Sierra Nevada Mountain area.

Fencing Repair
Finding and closing holes in the current fence that runs the perimeter of the HLWA will prevent stray cattle from entering the HLWA.

Removal of Conifer Trees

If HLWA biologists determine that conifers are encroaching upon aspen stands, the conifers shall be removed to prevent further damage to aspen habitat.

Controlled Burning of Aspen Stands
Controlled burning of aspen stands would allow for regeneration of juniper as the burned area goes through the successional stages of reforestation. Mature aspen trees can survive a low-severity fire. Aspen stands are often referred to as having an "asbestos" or "fire break effect" as a fire travels through a forest. After fire disturbance, aspen are quick to re-sprout (Brown 2000). Increased sun exposure of the soil due to canopy death, "blackening" of the soil due to the charring effect of fire, and the absence of moisture trapping due to reduced leaf litter and organic matter on the top layer of soil after a burn cause increased soil temperatures. Growth hormone inhibitors present in aspen roots are destroyed by soil heating, and aspen re-sprout profusely from their root systems.

If a controlled burn is being considered, a fuels manager will assess the area and consult the CDFG as to the best approach and desired results of a controlled burn.

Potential Environmental Impacts and Mitigation

All juniper and Jeffery pine eradication and monitoring efforts will be conducted according to established protocols and extreme care will be taken to minimize human disturbance. All juniper and Jeffery pine eradication will be conducted by qualified staff to assure minimized disturbance to species and habitats.

Future decisions regarding fire suppression on the HLWA need to consider aspen tree management. If fires are to be suppressed other conifer encroachment measures will need to be implemented. However, if fire is to be used within the HLWA, effects to other areas, such as sage grouse habitat, need to be considered carefully.

Biological Element: Biological Protection and Enhancement

Goal: Active management of aspen stands and damaging agents on these stands.

Management Constraints

1. Aspen fungus can be difficult to control and remove.
2. Aspen fungus can be costly in time as well as money to control in a forest stand setting.
3. Funding and personnel for fall season disposal of infected leaves.
4. Funding and personnel for removal of seriously infested trees.

Tasks

a. Survey for fungus during the late summer and mark affected trees

b. Dispose of leaves of effected trees after leaf drop in the fall if fungus threatens the survivability of a clone.

Discussion:
Aspen fungus diseases can effect the health of the host severely only if infection is repeated for several years. After a severe infection, the tree could prematurely drop its leaves. If this happens late in the growing season, the tree may not be able to harden off in time for winter, causing it to loose much of its stored starch and incur severe frost damage during the winter. However, this is a rare occurrence and takes many years of infection to reach that point (Jacobi 2006). If severe infection occurs within a single clone stand for several years in a row, the site may experience loss of that clone.

One type of fungus that effects aspen trees is aspen rust (*Melamspora* sp.), a fungus whose life cycle involves two species of tree, a conifer and the aspen. Pines, firs, or spruces may act as the conifer host for aspen rust. The dead, dry leaves of infected aspen that fell in the previous fall will release spores in the wet, early spring. These spores will infect the needles of a conifer host, and within 2-3 weeks, spores will be produced again and can be blown onto aspen trees (Jacobi 2006).

Fungus Management
Infected trees should be identified and flagged in the late summer by the orange pustules on the underside of the leaves. After leaf drop, leaves of flagged trees can be collected and disposed to diminish infection the following spring (Jacobi 2006).

Management of aspen fungus diseases can include spot burning in areas of severe infection. However, the fungus species should be identified before any management actions are taken.

Potential Environmental Impacts and Mitigation

All aspen rust control and monitoring activities will be conducted with extreme care to minimize human disturbance to the ecosystem. Aspen rust control may involve the removal or controlled burning of aspen trees, which could disrupt the habitats of a number of species found within aspen stands. However, cutting or burning of the trees will only take place in cases of extreme infestation.

Aspen rust control can also involve removal of fallen leaves, which exposes soil to the erosive effects of rain, wind, and runoff. If large portions of ground are exposed and there is not an herbaceous layer for protection from erosive forces, a ground cover, such as straw or biodegradable cloth will be placed over the area.

Biological Element: Biological Inventory

Goal: Conduct bird surveys and small mammal trapping to provide a data inventory of wildlife community structure found on-site.

Management Constraints

1. Funding for field personnel and equipment to conduct surveys, and follow up analysis of data collected.

Tasks

a. Conduct bird surveys and small mammal trapping surveys.
b. Conduct follow-up data analyses of populations and trends.

Discussion:
It is necessary to know the wildlife community structure found on-site to ensure management actions at the HLWA can be well guided and appropriate to the species and communities that occur there. The introduction or encroachment of non-native species can be monitored and addressed in a timely manner.

Ongoing, protocol-level surveys are needed to track and identify known and potential special-status species present within the HLWA, including habitat associations and densities. These ongoing surveys will serve to monitor known populations of special-status species within the HLWA and will provide baseline data for any newly identified species.

Protocol level surveys have not been conducted and there is limited data regarding the presence of non-game species on-site. Additional funding for the HLWA could provide for additional employees to lead small mammal trapping and bird surveys. If lack of funds prevent in-house studies of the area, graduate students from nearby universities, or other interested research entities, could be encouraged to conduct research on the HLWA.

Many of the habitats found on-site, especially the wet meadow habitats are naturally recovering from past grazing activities. As the stray cattle are prevented from grazing within the HLWA by the repair of the fence, this habitat recovery may attract additional animals and allow for plants to return to the HLWA that have not been documented on-site in recent years. This recovery process could also be an additional “selling point” to graduate students, or other research entities, who may be interested in studying the area.

Potential Environmental Impacts and Mitigation

Wildlife assessments can negatively impact the populations under study. Small mammal trapping and mist netting/banding of bird species can cause stress and at times, harm to the subject individuals. However, the resulting benefit of a thoroughly understood community in regards to management of the area, is thought to out-weigh the negative impacts to individuals of that community. All wildlife assessment and monitoring will be conducted according to established protocols and extreme care will be taken to minimize and prevent injury to wildlife. All wildlife assessments will be

conducted by qualified staff, or university personnel, and students under direction of the CDFG to assure minimal disturbance to species and habitats.

Biological Element: Wildlife Protection

Goal: Actively prevent the introduction of human attractants to the black bear population and the disturbance of bald eagle nests and other sensitive resources.

Management Constraints

1. Availability of funding

Tasks

a. Erect electric fencing around the egg taking facility structures that hold trout and could allow bears to easily access the fish.
b. Properly dispose of bear attractants.
c. Provide information to HLWA visitors about bear life history, aggressive behavioral cues, and appropriate human response to these cues.

Discussion

Electric Fencing

The man-made trout run into the egg taking facility at Heenan Lake provides an easy meal for black bears. This poses a problem by negatively effecting operations at the station and could culture problem bears. Electric fencing can be erected around the station structures to prevent predation on LCT.

Public Information

The kiosk at the HLWA can be used to provide information about black bears to the public. Information could include proper disposal of bear attractants, black bear biology and life history, aggressive behavioral cues, and appropriate responses to these behavioral cues.

Road Closure

The road along the western edge of Heenan Lake leading to Bagley Valley runs very near a tree that has had a nesting pair of bald eagles for five of the past six years. Other sensitive bird species, such as pelicans, osprey and the willow flycatcher, could be impacted by motorized vehicle use within the HLWA. Additionally, motorized vehicles, particularly off highway vehicles (OHV), within the HLWA would be operating adjacent to a USFS wildlife area. The HLWA is remote, and patrol of the area would not be feasible if motorized vehicles were granted access. Thus, unauthorized motor vehicle traffic, including ATV use, is prohibited within the HLWA. Due to the remote nature of the site, the absence of adequate patrols and the presence of sensitive resources within, and adjacent to, the HLWA, unrestricted motorized vehicle access could result in significant impacts to the area's resources.

Potential Environmental Impacts and Mitigation

No negative impacts are foreseen as a result of these actions. These actions can decrease the chance of negative human-bear interactions. The road closure will prevent negative impacts resulting from disturbances to nesting bald eagles, special-status bird species, the adjacent USFS wildlife area and other sensitive resources.

Public Use Elements: Goals & Environmental Impacts

The overall public use goals for the HLWA are:

- to develop existing fishing and hunting as public use of the area;
- to inventory cultural sites.

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Public Use Element: Fish and Wildlife

Goal: Continue to provide recreational catch-and-release fishing and seasonal hunting public use of the area.

Management Constraints

1. Management success of wildlife harvest populations is dependent on healthy population numbers.
2. The continued spread of invasive plant species may impact the health of wildlife that depend on native plant species.
3. The presence of threatened and endangered species will limit and/or guide the process of management practice implementation.
4. Management implementation is dependent on long-term funding.

Tasks

a. Conduct periodic surveys of the HLWA to determine fish and wildlife species present.
b. Enhance habitat for wildlife, repair fencing.
c. Conduct wildlife surveys, including deer population and recruitment studies to maintain healthy populations.
d. Protect the wildlife sanctuary during breeding and nesting of sensitive species.
e. Monitor predation on deer populations.
f. Monitor disease outbreaks.
g. Evaluate fish health and population trends in Heenan Lake; provide special angling and boating regulations as needed.
h. Actively assess and manage migratory deer herds using established CDFG protocol.
i. Evaluate reimplementation of public use permits during fishing season.

Discussion of Tasks:

Species Surveys

Casual observations have identified birds, mammals, reptiles, amphibians and plants. Ongoing surveys are needed to identify other species present, including habitat associations and densities. These ongoing surveys will also serve to monitor known populations of fish and wildlife. Introduction of invasive fish or plant species will need to be monitored to quickly assess problems and prevent further spread, or possible attempts at eradication, of the invasive species.

Enhance Wildlife Habitat and Cover

The HLWA has been used for summer grazing by cattle and sheep beginning in 1924-1925. Grazing is not currently allowed within the HLWA. However, the fencing around the site is in need of repair and cattle stray into the area. Without active restoration efforts, the native meadow plants are recovering on their own. Fencing will be repaired to prevent stray cattle from grazing within the HLWA boundary. This will allow habitats to continue to recover without further disturbance.

Conduct Recruitment and Population Studies for Deer

Short-term fluctuations in deer populations are usually attributed to weather events that affect forage production (CDFG 2005). As part of CDFG's Deer Management Program, biologists develop hunting regulations, provide expertise on habitat and population assessments, compile harvest information, conduct and direct research needs, monitor and estimate populations and respond to various public inquiries related to deer in California (CDFG 2005). The CDFG biologists are currently developing a more realistic approach through a *Strategic Plan for California Deer* in order to more effectively manage deer herds given the existing and anticipated changes to California's environment (CDFG 2005).

Wildlife Sanctuary

Periodic assessments are needed to ensure that management of the area satisfies the function of suitable habitat for wildlife. Surveys will be conducted to collect trend and management data. Sight specific surveys are not used to set hunting seasons.

Predation Monitoring

Ground-nesting birds are especially vulnerable to predation by skunks, raccoons, and coyotes. One of the primary causes of poor recruitment for sage grouse is predation. Future management within the HLWA would be consistent with the Statewide Recovery Plan for Sage grouse.

Control of Disease Outbreak

As a preventative measure, and in the case of an outbreak of the West Nile Virus, the staff at the HLWA will implement the *Center for Disease Control Epidemic/Epizootic West Nile Virus in the United States: Guidelines for Surveillance, Prevention, and Control (***Attachment G)**.

The Chronic Wasting Disease (CWD) Surveillance Program has yet to find any cases of CWD in California and CDFG tests 500 deer annually for the disease. Because of limits on the importation of deer, elk, and their body parts from other states, California is considered a low risk state for a CWD outbreak. The CDFG CWD Surveillance Program staff will be consulted if an outbreak is reported in California. Appropriate preventatives and controls will be implemented for all other relevant diseases as well.

Fish Species
Electrofishing surveys should be conducted in Heenan Lake. Ongoing surveys will be conducted to account for Lahonton cutthroat trout occurring within the HLWA and to evaluate age and growth structure of the population. The assessment of the actual, and potential, introduction of nonnative species into the lake, particularly in regard to public use, will be annually assessed.

Fishing is allowed on a catch-and-release basis during the months of September and October. Only the use of single, barbless hooks on artificial lures are allowed in the HLWA. No motorized boats are allowed on Heenan Lake. Canoes and float tubes, powered by small electric motors, are permitted.

Monitor Deer Herd Populations
The Carson River deer herd population will be monitored and assessed in keeping with CDFG's Deer Management Program through the *Strategic Plan for California Deer.* Wet Meadow and the edges of aspen habitats provide excellent fawning grounds for deer. Therefore, management and recovery of these habitats within the HLWA will support a healthy deer population.

Public Use Permits
Pursuant to the California Code of Regulations, Title 14 (§553), the CDFG may require anglers to obtain public use permits during the fishing season at Heenan Lake. If the CDFG elects to reinstate a mandatory permit, all anglers aged 16-years or older shall be required to pay a set fee per 3-day weekend period. If the CDFG chooses to reinstate the use permit requirements, the Department will adhere to appropriate guidelines, including the public notification process.

Potential Environmental Impacts and Mitigation

All wildlife assessment and monitoring, as well as fence repair activities, will be conducted according to established protocols. Extreme care will be taken to minimize human disturbance.

Fencing will prevent stray cattle from entering the HLWA and disturbing the habitats found on-site. Disturbance by heavy cattle grazing can provide benefits for aspen habitat. Areas formerly disturbed by grazing can provide excellent opportunities for aspen trees to re-colonize the area. Preventing cattle grazing is in keeping with CDFG's community level management philosophy. Therefore, no negative impacts are assumed to occur due to the erection of a fence around the perimeter.

Fencing can prove hazardous to sage grouse and goshawks. These birds do not see the thin fence wires and can collide with them mid-air. To increase visibility, flagging will be installed and maintained on all fencing within 1 km of sage grouse and goshawk habitat and foraging areas.

The following public use activities are allowed in the HLWA: hunting, fishing, sightseeing, bird watching/nature study, hiking, skiing and snowshoeing. Cycling is permitted on the roads within the HLWA and horseback riding is allowed for passage only. Pack stock and the grazing of horses are not permitted within the HLWA. Care must be taken to ensure public use activities do not disrupt the activities of wildlife. Species are particularly sensitive to disturbance during the nesting and brood rearing season. Information will be displayed informing the public on proper conduct in regards to sensitive species within the HLWA. The following uses are not permitted within the HLWA: unauthorized motor vehicle use (including all terrain vehicles and snowmobiles), camping/trailers or fires. As described above, boats are permitted, with limitations, during the fishing season. Commercial activities are generally prohibited, though filming may be permissible through acquisition of the appropriate permits.

Catch-and-release fishing may negatively impact individual fish. Negative impacts stemming from catch-and-release fishing include: fishing gear breaking and remaining lodged in fishes' mouths, damage to mouth parts from the hooks or removal of hooks, and damage to the slimecoat of fish by handling. Informing the public on the proper way to handle and release fish is the best way to prevent these potential impacts. Negative impacts due to catch-and-release fishing tend to be significant only when water temperatures approach 70º F (Titus 1988). If anglers follow proper fish handling techniques, negative impacts to fish in Heenan Lake can be minimized.

Hunting activities can have an obvious negative impact to wildlife resources if populations of wildlife are not managed correctly. Wildlife game surveys shall be conducted to provide population trend data overtime. These data can help the HLWA managers promote sustainable, healthy communities of wildlife and their habitats on-site.

Public Use Element: Cultural Resources

Goal: Acquire additional information about the cultural sites within the HLWA, especially mapped locations of the sites.

Management Constraints

1. Funding availability.
2. Personnel availability.

Tasks

a. Review existing literature for the data points.
b. If data cannot be found conduct site visits and obtain GPS coordinates of cultural sites.

Discussion:
Information exists regarding the cultural sites within the HLWA (see **Attachment C**). However, the CDFG does not currently have a location map for the sites. A location map would be used when planning any activities that would include road or facility repair, storage of equipment, or even public access issues. The location map will not be published or available for public viewing to protect these areas from any impacts such as vandalism.

Literature Review
Summit Envirosolutions, Inc. may posses data points currently unknown to the CDFG. Summit Envirosolutions should be contacted regarding CDFG acquisition of these data.

Site Visits
If Summit Envirosolutions, Inc. does not posses the cultural site locations, site visits by qualified personnel will be necessary to map these locations. Site locations will be recorded using a GPS unit to keep these data easily accessible to CDFG staff.

Environmental Impact

No negative environmental impacts are expected from these actions. It is important to keep the site locations from being made available to the public to prevent vandalism. Cultural resources will be protected as activities occurring at the HLWA can be planned to avoid impacts to the sites.

Facility Maintenance Element: Goals & Environmental Impact

The overall facility maintenance goal for the HLWA is:

- to develop and maintain the necessary facilities for the Lahonton cut throat trout hatchery and administrative activities to operate the wildlife area.

Biological Element: Preservation through facility maintenance and proper wildlife area management.

Goal: Develop and maintain the necessary facilities for the Lahonton cutthroat trout hatchery and administrative activities to operate the wildlife area.

Management Constraints

1. Continued funding of facilities maintenance and trout fishery management.
2. Competition between the Lahontan and the Lahonton hybrid cutthroat trout in Heenan Lake.

Tasks

a. Conduct annual inspection of hatchery and identify any potential problems or maintenance issues.
b. Conduct annual inspection of fencing and public use signage, repair any locations where fencing integrity is compromised or signage needs repair or has been vandalized.
c. Conduct annual inspection of the dam, valve, and spillway at Heenan Lake and identify any potential problems or maintenance issues.
d. The Department will conduct an annual review of the HLWA, identify any management problems or changes and will make the proper adjustments or changes to the management of the wildlife area.
e. Maintain proper functioning of all open roads on-site.
f. Maintain Department's existing water rights and conduct periodic inspections of water conveyance facilities within the HLWA to identify any potential problems or maintenance issues.

Discussion:

Annual Hatchery Inspection

A yearly inspection of hatchery facility conditions can identify potential problems and maintenance issues. Inspections will be conducted by qualified personnel who will identify problems and recommend solutions. Proper maintenance of the facility is the cost-effective approach to facility management. Problems, and plans for repairing the problems will be addressed by the Department in a timely manner. Problems, and potential problems, identified and addressed early can prevent larger more costly repairs in the future.

Annual Fencing and Signage Inspection

Fencing will be inspected once a year to insure proper functioning and maintenance in areas where the illegal trespass of cattle is likely. Proper maintenance includes repairing problems such as holes in the fence and fence post failure. Proper fence maintenance also includes maintenance of flagging within 1 km of sage grouse habitat and goshawk foraging and nesting habitat to prevent these birds from colliding with the fence mid-air.

The kiosk sign located near the lake will be inspected and properly maintained. Signage is subject to many uses and abuses in public use areas. All serious wear and vandalism will be repaired in a timely manner.

Annual Inspection of the Dam

Qualified personnel shall conduct an annual inspection of the dam, valve, and spillway to identify problems and possible future problems. If potential problems to the dam are found and repaired early, costly structural and environmental damage can be avoided.

Annual Administrative Review

Department personnel shall hold an annual meeting where they will discuss current direction and needs of the HLWA. Management of the HLWA should be considered adaptable to changing conditions on-site and changing knowledge about the proper management of wildlife areas. New studies continually increase the base knowledge of wildlife, and habitat management. New information about the best ways to maintain viable populations of the animals and habitats on-site should be actively incorporated into the management of the HLWA.

Road Repair and Maintenance
Maintain proper functioning of roads within the HLWA. Roads will be inspected for erosion and failure annually. Erosion is not only hazardous to vehicles using the road, it can also damage adjacent habitats. Poorly maintained roads can cause the dewatering of adjacent wet meadow, wetland or pond habitats, converting it to dry land. Poorly placed or maintained drainage ditches and culverts in association with roads can cause large erosion problems, and becoming very costly over time.

Water Rights and Facilities Inspections
Qualified personnel will conduct inspections of the water conveyance facilities within the HLWA to ensure proper functioning. The timely identification of maintenance issues will ensure cost effective remedies and the avoidance of environmental damage due to the failure of existing facilities.

Environmental Impacts

Facilities maintenance activities, including the use of heavy machinery, may temporarily impact lands immediately surrounding the work site. However, timely maintenance and repairs to the facilities within the HLWA will ensure cost-effective remedies and the avoidance of environmental degradation caused by failing infrastructures. For example, repairs to the access road will restore the adjacent wet meadow habitats to properly functioning conditions by allowing for habitat appropriate drainage of the wet meadows.

Other than the temporary impacts due to repair activities, no environmental impacts are foreseen from the implementation of these tasks. Negative impacts will be prevented by the scheduled inspection and timely maintenance of structures and facilities within the HLWA.

Regulatory Framework for Biological Elements

The following laws apply to the Biological Elements previously discussed. The CDFG will comply with any requirements mandated by these laws in the case of temporary or permanent impacts to respective resources.

Federal Endangered Species Act

The USFWS and National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) (formerly the National Marine Fisheries Service or NMFS) have jurisdiction

over species listed as threatened or endangered under Section 9 of the federal ESA. The ESA protects listed species from harm, or take, which is broadly defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct". Under section 7 of the ESA, a federal agency must consult with the USFWS and NOAA Fisheries if the agency's action may affect a threatened or endangered species and/or its critical habitat under the authority of each agency. The goal of this consultation is to ensure that the action is not likely to jeopardize the continued existence of any threatened or endangered species, or to result in the destruction or adverse modification of habitat critical to such species. If USFWS or NOAA Fisheries determines that an agency action is likely to adversely affect a listed species or critical habitat, the agency taking the action (Lead Agency) must initiate formal consultation.

California Endangered Species Act

The CDFG has jurisdiction over species listed as threatened or endangered under Section 2080 of the California Fish and Game Code. Section 2080 prohibits the take of a species listed by CDFG as threatened or endangered. The state definition of take is similar to the federal definition, except that Section 2080 does not prohibit indirect harm to listed species by way of habitat modification. To qualify as take under CESA, an action must have direct, demonstrable detrimental effect on individuals of the species. Impacts on habitat that may ultimately result in effects on individuals are not considered take under the CESA but can be considered take under the ESA.

Proponents of a project taking a state-listed species must consult with CDFG and enter into a management agreement and take permit under Section 2081. The CESA consultation process is similar to the federal process. The CESA does not require preparation of a state biological assessment; the federal biological assessment and the CEQA analysis or any other relevant information can provide the basis for consultation. CESA requires that CDFG coordinate consultation for joint federally listed and state-listed species to the extent possible; generally, the state opinion for the listed species is brief and references provisions under the federal opinion.

Clean Water Act, Section 404

The US Army Corps of Engineers (COE) and Environmental Protection Agency regulate the placement of dredged or fill material into "Waters of the United States" under Section 404 of the Clean Water Act. Waters of the United States include lakes, rivers, streams, and their tributaries, and wetlands. Wetlands are defined for regulatory purposes as "areas inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 Code of Federal Regulations [CFR] 328.3, 40 CFR 230.3).

The COE may issue either individual permits on a case-by-case basis or general permits on a program level. General permits are pre-authorized and are issued to cover

similar activities that are expected to cause only minimal adverse environmental effects. Nationwide permits (NWPs) are general permits issued to cover particular fill activities. All NWPs have general conditions that must be met for the permits to apply to a particular project, as well as specific conditions that apply to each NWP.

Clean Water Act, Section 401

Section 401 of the Clean Water Act requires water quality certification and authorization of placement of dredged or fill material in wetlands and Other Waters. In accordance with Section 401 of the Clean Water Act, criteria for allowable discharges into surface waters have been developed by the State Water Resources Control Board, Division of Water Quality. The resulting requirements are used as criteria in granting National Pollution Discharge Elimination System (NPDES) permits or waivers, which are obtained through the Central Valley Regional Water Quality Control Board (CVRWQCB). Any activity or facility that will discharge waste (such as soils from construction) into surface waters, or from which waste may be discharged, must obtain an NPDES permit or waiver from the CVRWQCB. The CVRWQCB evaluates an NPDES permit application to determine whether the proposed discharge is consistent with the adopted water quality objectives of the basin plan.

California Fish and Game Code, Sections 1601-1616

Under the California Fish and Game Code, Sections1601-1616, CDFG regulates projects that divert, obstruct, or change the natural flow or bed, channel, or bank of any river, stream, or lake. Proponents of such projects must notify CDFG and enter into streambed alteration agreement with them. Section 1601 of the California Fish and Game Code requires a state or local governmental agency or public utility to notify CDFG before it begins a construction project that will: (1) divert, obstruct, or change the natural flow or the bed, bank, channel, or bank of any river, stream, or lake; (2) use materials from a streambed; or (3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake. Once the notification is filed and determined to be complete, CDFG issues a streambed alteration agreement that contains conditions for construction and operations of the proposed project.

California Fish and Game Code, Section 3503.5

Under the California Fish and Game Code, Section 3503.5, it is unlawful to take, possess, or destroy any birds in the orders Falconiformes (hawks, eagles, and flacons) or Strigiformes (owls). Take would include the disturbance of an active nest resulting in the abandonment or loss of young.

Migratory Bird Treaty Act

The MBTA (16 United States Code [USC] 703) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union and

authorized the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. The MBTA sets seasons and bag limits for hunted species and protects migratory birds, their occupied nests, and their eggs (16 USC 703, 50 CFR 21, 50 CFR 10).

Magnuson-Stevens Fishery Conservation and Management Act

The 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) set forth new mandates for NOAA Fisheries, regional fishery management councils, and federal action agencies to identify and protect important marine and anadromous fish habitat. The Councils, with assistance from NOAA Fisheries, are required to delineate “essential fish habitat” (EFH) in fishery management plans (FMPs) or FMP amendments for all managed species. Federal action agencies which fund, permit, or carry out activities that may adversely impact EFH are required to consult with NMFS regarding potential adverse effects of their actions on EFH, and respond in writing to NOAA Fisheries’ conservation recommendations. In addition, NOAA Fisheries is required to comment on any state agency activities that would impact EFH. Although the concept of EFH is similar to that of critical habitat under the ESA, measures recommended to protect EFH are advisory, not prescriptive.